

NOTES ON NEOTROPICAL MALPIGHIACEAE—VIII

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ABSTRACT. A lectotype is proposed for *Bunchosia gracilis* Nied. that will make it a synonym of *B. lindeniana* Adr. Juss. Four new species are described and illustrated: *Bunchosia grayumii* W. R. Anderson (Costa Rica and Panama), *Byrsonima flexipes* W. R. Anderson (Colombia and Venezuela), *Heteropterys aequatorialis* W. R. Anderson (Ecuador and Peru), and *Mezia russellii* W. R. Anderson (Peru); four additional species are described without illustration: *Bunchosia mesoamericana* W. R. Anderson (Guatemala, Honduras, Nicaragua, and Costa Rica), *Bunchosia stipulacea* W. R. Anderson (Panama), *Heteropterys hammelii* W. R. Anderson (Costa Rica), and *Hiraea fosteri* W. R. Anderson (Panama).

This article is a miscellany comprising one lectotypification and eight new species. Most of the latter are proposed as supplements to recently published floristic treatments or in anticipation of other floristic treatments due to be submitted in the next few years.

Bunchosia gracilis Nied., Ind. Lect. Lyc. Reg. Hos. Brunsberg. p. hiem. 1898–1899: 5. 1898.—TYPE: GUATEMALA. Alta Verapaz: Alta Verapaz, Pansamalá, 3800 ft, Sep 1886 fl, *H. von Türckheim* in *J. D. Smith 1033* (lectotype, here designated: US!; isolectotypes: GH! K! NY!).

Among the four syntypes of this name there were at least two species, perhaps more. The lectotype chosen here is a specimen of *Bunchosia lindeniana* Adr. Juss.; I hope that by making this selection I shall succeed in consigning a poorly characterized name to synonymy.

Bunchosia grayumii W. R. Anderson, sp. nov.—TYPE: COSTA RICA. Limón: Reserva Biológica Hitoy Cerere, from Río Cerere to Cerro Bobókara, understory in rainforest, 100–600 m, 26 Feb 1991 fl, *F. Almeda 6812* (holotype: MICH!; isotype: CAS!). Fig. 1.

Frutex vel arbor parva 1.3–5 (–12?) m alta; lamina foliorum majorum 11–16 (–19.5) cm longa, 4.7–7.6 cm lata, margine discolor, apice acuminata, mox glabrata, abaxialiter utrinque (3–) 6–10 glandulis parvis in 1 serie instructa; petiolus 5–12 mm longus; inflorescentiae 3.5–8.5 cm longae, ex 12–20 floribus ± decussatis constantes; pedicellus pertinaciter sericeus; petala omnia eglandulosa; gynoecium 2-carpellatum, glabrum, 4–4.5 mm longum; stylus ut videtur 1, ex 2 connatis constans, stigmatate discoideo integro; fructus siccus ruber, 8–9 mm longus, 8–9.5 mm diametro, glaber, pariete laevi.

Shrub or small tree 1.3–5 (–12?) m tall; stems thinly sericeous to glabrate, often dark reddish. Lamina of larger leaves 11–16 (–19.5) cm long, 4.7–7.6 cm wide, elliptical or slightly ovate or obovate, cuneate at base, thin, slightly revolute, and often discolored (brown or dark reddish) at margin (at least in dried specimens),

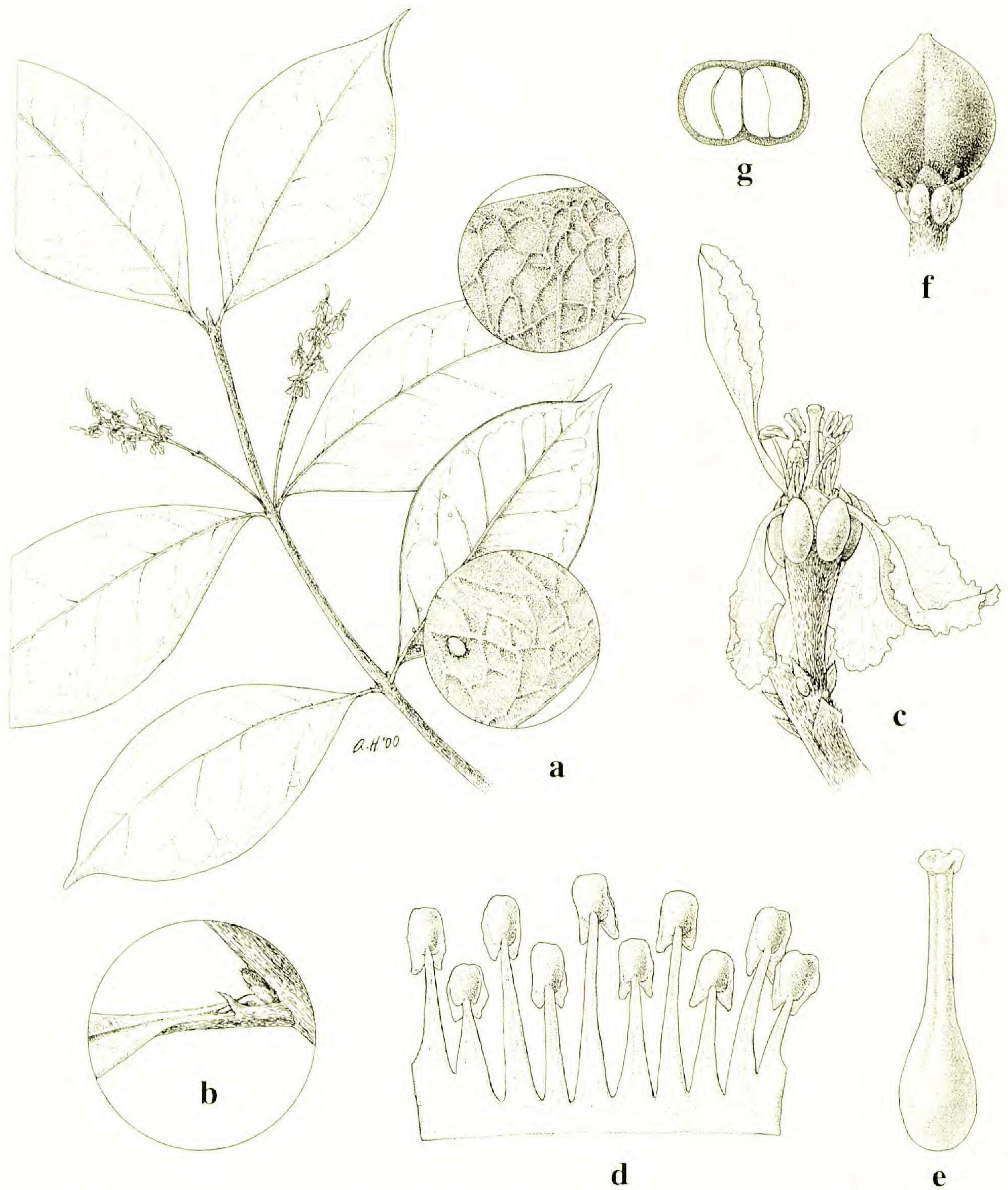


FIG. 1. *Bunchosia grayumii*. a. Flowering branch, $\times 0.35$, with enlargements of adaxial surface of lamina (above) and abaxial surface including gland (below), \times ca. 6. b. Petiole with stipules, $\times 2$. c. Node of pseudoraceme and flower, side view with posterior petal to left, $\times 3.5$. d. Androecium laid out, abaxial view, with stamen at right opposite posterior petal, $\times 8.5$. e. Gynoecium, $\times 8.5$. f. Fruit, $\times 2$. g. Cross-section of fruit, $\times 2$. Drawn by Amanda Humphrey. (Based on: a–e, *Almeda 6812*; f–g, *González 1555*.)

\pm abruptly acuminate at apex with the acumen 5–13 (–18) mm long, initially very sparsely sericeous on both sides, especially on midrib, the hairs short, white, straight, appressed, but soon glabrate, the principal lateral veins 5–8 on each side, the intricate reticulum prominent on both sides in young leaves but often becoming barely visible in older thicker leaves, the abaxial glands 0.6–1 (–1.2) mm in diameter, rarely only 3–4 on each side in the proximal 1/3 but usually 6–10 in a row diverging from near the midrib and 5–15 mm above the base, extending outward distally with the most distal glands 1/2–2/3 of the distance toward the apex and 2–11 mm

from the margin; petiole 5–12 mm long, thinly sericeous to glabrate, eglandular; stipules 0.5–1.2 mm long. Pseudoracemes 3.5–8.5 cm long, mostly axillary to vegetative leaves, unbranched and without vegetative leaves, but occasionally paired at the apex of a leafless axillary branch ca. 1 cm long with the 2 pseudoracemes axillary to bracts, the axis sericeous, the 12–20 flowers mostly decussate or some decussate and others in no regular order; bracts and bracteoles persistent; bracts 0.9–1.7 mm long; peduncle (0–) 0.5–1.8 mm long; bracteoles 0.5–1 mm long, 1 of the pair (occasionally both) bearing 1 large, eccentric, sessile or slightly peltate abaxial gland; pedicel 2.5–4.5 mm long (–5.5 mm in fruit), often somewhat inflated distally, persistently sericeous. Sepals 1–1.5 mm long beyond glands, 1.5–2 mm wide, broadly rounded at apex, abaxially glabrous, ciliate on margin, adaxially glabrous, appressed in anthesis; glands well developed, 8, all distinct or some pairs from adjacent sepals up to 1/2 connate, 2.3–3 mm long, the anterior 2 shortest and the posterior 2 longest, ovate or elliptical, not or hardly compressed, glabrous, free and \pm spreading in the distal 1/2, the longest 2 somewhat to strongly decurrent onto pedicel. Petals lemon-yellow, glabrous, erose or dentate, all eglandular but the proximal teeth sometimes slightly thickened and rounded; lateral petals reflexed, with the claw 2–3 mm long and limb 4–6 mm long, 4–7 mm wide, the anterior pair larger and deeply cupshaped (especially the outermost), the posterior pair shallowly concave; posterior petal erect, with the slender claw ca. 3.5–4.5 mm long, widening gradually into the obovate limb 3–5 mm long, 3–4.5 mm wide, flat or shallowly concave. Stamens glabrous; filaments 2.5–3 mm long opposite sepals, 1.5–2.5 mm long opposite petals, longest opposite anterior sepal, white, membranous, connate basally up to 1 mm; anthers 0.8–1.3 mm long, the connectives somewhat glandular-swollen, yellow to brown. Gynoecium 2-carpellate, glabrous, flask-shaped with the 2-locular ovary ca. 1.5 mm high and merging gradually into the style; style apparently 1, actually 2 completely connate, ca. 2.5–3 mm long, reaching as high as or higher than the anthers, the single large discoid stigma entire. Fruit red, 8–9 mm long, 8–9.5 mm in diameter (dried), globose or 2-lobed, glabrous, the wall smooth throughout development.

In understory of wet tropical forests at 100–700 m in Caribbean lowlands of Limón, Costa Rica, and adjacent Panama; collected with flowers in February, March, July, September, and November, and with fruits in October, November, and January.

ADDITIONAL SPECIMENS EXAMINED. **Costa Rica.** LIMÓN: Reserva Biológica Hitoy Cerere, Valle de la Estrella, 9°4'30"N, 83°01'20"W, *Carballo* 241 (INB, MICH), 427 (INB, MO); Cantón de Talamanca, R.I. Talamanca, Baja Talamanca, Senderos Revienta-pechos y Espaval, 9°33'N, 83°01'W, *Carballo* 448 (INB); cerca del pozo San José #1 (RECOPE), 9°35'N, 82°58'W, *Cowan* 4584 (CAS, MICH, TEX); Cantón de Talamanca, Faja Costeña de Limón, Puerto Viejo, *González* 516 (CR, MO); Cantón de Talamanca, cuenca del Sixaola, San Miguel, Asacode, alrededores de la estación, 9°34'30"N, 82°40'00"W, *González* 1555 (INB); hills ca. 2 km S of Manzanillo de Talamanca, E of Quebrada Hone Wark, 9°37'N, 82°39.5'W, *Grayum et al.* 4384 (CR, MO); Talamanca, Fila Carbón, Buena Vista, 9°39'34"N, 82°53'54"W, *Valverde* 16 (CR). **Panama.** BOCAS DEL TORO: Filo Almirante, trail to Riscó Abajo, 3 km SW of town of Almirante, *Nee & Hansen* 14112 (F, MO, WIS).

The epithet of *Bunchosia grayumii* honors Michael H. Grayum, b. 1949, in recognition of his many years of work on the flora of Costa Rica. *Bunchosia grayumii* falls into the group of species with a glabrous bicarpellate gynoecium and leaves that are sparsely sericeous to glabrate. In Costa Rica the species that most resembles it is *B. polystachia* (Andr.) DC., from which it can be distinguished by the following couplet:

Leaves with an abaxial row of (3-) 6-10 glands on each side, the glands mostly 1 mm or less in diameter; fruit up to 9 mm long, smooth throughout development, red; margin of lamina discolored, brown or dark reddish in dried specimens; pedicels persistently sericeous; petiole of larger leaves 5-12 mm long; stigmas completely connate into 1 large, discoid, entire stigma.

B. grayumii.

Leaves with mostly 1 abaxial gland (rarely 2) on each side near base, the glands 1-2 mm in diameter; fruit 9-14 mm long, granular when young, becoming smooth only at full maturity, yellow to red; margin same color as rest of lamina; pedicels glabrous or only sparsely sericeous; petiole of larger leaves 3-6 mm long; stigmas usually distinct.

B. polystachia.

Bunchosia grayumii is also notable for the posterior petal with its long claw that widens gradually into the limb, and for the flask-shaped gynoecium with its long, slender style.

Bunchosia mesoamericana W. R. Anderson, sp. nov.—TYPE: GUATEMALA. Zacapa: Gualán, ravine, 620 ft, 20 Jun 1909 fl, C. C. Deam 6363 (holotype: MICH!; isotypes: F! GH! MO! NY! US!).

Frutex vel arbor parva 3-8 (-10) m alta, ramis lenticellis instructis; lamina foliorum majorum 6-13 (-17) cm longa, 3-7 (-9) cm lata, ovata vel elliptica, apice plerumque acuminata, abaxialiter tomentosa vel glabrescens et utrinque costae 1 (aliquando 2, rarissime 3) glandulis instructa; petiolus 4-10 mm longus; stipulae 0.5-1.2 mm longae; inflorescentiae 3-11 cm longae, ex 8-24 (-32) floribus plerumque decussatis constantes; petala omnia eglandulosa; gynoecium 2-carpellatum, tomentosum; stylus ut videtur 1, ex 2 connatis constans; fructus siccus 12-20 mm longus et diametro, glabrescens, pariete laevi.

Shrub or small tree 3-8 (-10) m tall; stems thinly sericeous to glabrate, soon developing many punctiform lenticels. Lamina of larger leaves 6-13 (-17) cm long, 3-7 (-9) cm wide, ovate or elliptical, cuneate and often slightly decurrent at base, mostly acuminate at apex but sometimes acute and rarely obtuse, initially appressed-tomentose or subsericeous above but soon glabrate, persistently tomentose below or glabrescent at maturity with some hairs persistent at least on midrib, the hairs sessile or short-stalked, white and very fine, somewhat sinuous to strongly twisted with the longer hairs loose, spreading, non-parallel, 1-1.5 mm long, the abaxial glands 0.3-1.2 mm in diameter, typically 1 on each side between midrib and margin in proximal 1/3, occasionally with 1 additional gland distally on one or both sides and very rarely an inframarginal row of 2 or 3; petiole 4-10 mm long, loosely sericeous or tomentose to glabrate, eglandular; stipules 0.5-1.2 mm long. Pseudoracemes 3-11 cm long, axillary, without leaves and unbranched, the axis sericeous to glabrescent in fruit, the 8-24 (-32) flowers mostly decussate; bracts and bracteoles persistent; bracts 0.7-2.5 mm long; peduncle (0.5-) 1-4 mm long; bracteoles 0.5-1 mm long, both eglandular or 1 of the pair bearing 1 small sessile abaxial gland; pedicel (2-) 3-6 mm long (-7.5 mm in fruit), often somewhat inflated distally, thinly sericeous to glabrate. Sepals 1.5-2.2 mm long beyond glands and 1.2-1.7 mm wide, broadly obtuse or rounded at apex, abaxially glabrous or bearing a few hairs at base, ciliate on margin, adaxially glabrous, erect to spreading and revolute on sides in anthesis; glands rudimentary or, if well developed, 8 (from 10 with the anterior 4 connate in pairs?), 1.4-2.4 mm long, the anterior 2 shortest and the posterior 2 longest, obovate, compressed, glabrous, the longest 2 very slightly decurrent onto pedicel. Petals yellow, glabrous, erose or dentate or irregularly lacerate, especially the outermost, all eglandular on margin; lateral

petals with the claw 2–3.5 mm long and the limb 4–6 mm long, 4–7 mm wide, the anterior pair cupshaped, the posterior somewhat concave to nearly flat; posterior petal with the wide claw 3–3.5 mm long, the limb 4 mm long and wide, flat. Stamens glabrous; filaments 2.5–4 mm long opposite sepals, 2–3.5 mm long opposite petals, longest opposite anterior sepal, shortest opposite posterior petal, white, membranous, connate in proximal 0.8–1.2 mm; anthers 0.6–1.2 mm long, the connectives somewhat glandular-swollen, initially light brown, turning darker with age. Gynoecium 2-carpellate; ovary 1.2–1.8 mm high, tomentose, 2-locular; style apparently 1, actually 2 completely connate, 2–2.7 mm long, reaching about as high as anthers or a little shorter, densely tomentose, the 2 stigmas distinct. Fruit orange to red, 12–20 mm long and in diameter (dried), globose or 2-lobed, thinly sericeous or tomentose to nearly glabrate, the wall smooth throughout development.

The epithet refers to the fact that the distribution of this species is wholly within Central America.

Mostly in dry thickets, ravines, and forests of Guatemala, Honduras, Nicaragua, and Costa Rica, from sea level to 1450 m; collected with flowers (March–) May–October and with fruits July–November.

ADDITIONAL SPECIMENS EXAMINED. **Honduras.** COMAYAGUA: carretera a Villa Chicúas, *Molina R.* 10989 (F, MO, NY); Valle Comayagua, *Molina R.* 5762 (F, US).—EL PARAÍSO: Valle Jamastrán, *Molina R.* 7497 (F, US).—FRANCISCO MORAZÁN: alrededores de la Ciudad Universitaria, Tegucigalpa, *Andino B.* 151 (MICH, MO), Trayecto “La Tigra,” *Bustillo* 71 (MICH), Quebrada La Orejona, *Espinal* 65 (MICH), orillas Quebrada La Orejona, *Gómez* 193 (NY), Quebrada la Orejona, *Ruiz* 193 (NY), Quebrada Orejona, *Tróchez* 139 (MICH), *Villeda* 195 (MICH, MO); cerca de la Travesía, *Molina R.* 1130 (F, GH, US); carretera vieja entre Suyapa y San Roque a Tegucigalpa, *Molina R.* 14570 (F, NY, US); Quebrada Suyapa, aldea de Suyapa, NW de Tegucigalpa, *Molina R.* 2552 (F, GH, US); abajo de Suyapa, entre Villa San Roque y Tegucigalpa, *Molina R.* 2777 (F, GH, US); Guamiles de la aldea de la Travesía, *Molina R.* 3264 (F, GH); Santa Lucía, *Molina R.* 3290 (F, GH); Tegucigalpa, SE Colonia Luis Landa, calle a Colonia Florencia, *Nelson* 8612 (MO); Cerro El Picache, Tegucigalpa, *Rodríguez* 197 (MICH, MO); vicinity of Suyapa, region of La Travesía, *Standley* 12432 (F), Villa San Roque, *Standley* 22263 (F, US), *Standley* 26448 (F, GH, US). **Nicaragua.** ESTELÍ: faldas del Chayote, *Moreno* 21782 (MICH); vicinity of Condega, *Standley* 20386 (F); 15.5 mi N of Estelí, *Webster et al.* 12065 (F, GH, MO, US).—MADRIZ: 20 km SE of Somoto, *Harmon & Fuentes* 6004 (ENCB, MO); mountains above Somoto, *Williams & Molina R.* 10942 (F, GH, US). **Costa Rica.** GUANACASTE: Parque Nacional Santa Rosa, Liberia, de Bahía Salinas a Santa Cecilia, *Espinoza* 461 (CR, INB, MICH), *Janzen* 10098 (MO), *Janzen* 10197 (MICH), 30 km NW of Liberia, *Janzen* 11795 (MO, NY), 1 km left of fork in road to Playa Naranjo, *Liesner* 2236 (F, MO), Río Pozo Salada, *Liesner* 2283 (CR, F, MO), along Río Guapote, *Liesner & Lockwood* 2612 (CR, MO), slope below Questa and lowland forest at fork in road to Playa Naranjo, *Liesner et al.* 3389 (MO), 30 km NW of Liberia, *Stevens* 44 (MO), 14 km SW of Carretera Interamericana, 36 km NW of Liberia, *Wilbur* 21448 (DUKE), 15 km SW of entrance, *Wilbur* 22900 (CR, DUKE, F, MICH), 35 km NW of Liberia, 2 km from beach at Playa Naranjo, *Wilbur* 26597 (DUKE), ca. 12 km SW of park entrance, *Wilbur* 26602 (DUKE); Sendero Hato Viejo, P.N. Paloverde, 10°23'N, 85°23'W, *Chavarría* 628 (INB, MICH); Liberia, P.N. Guanacaste, Cerro Cacao, Estación Cacao, 10°55'45"N, 85°28'15"W, *Chávez* 596 (CR); vicinity of Cañas, Finca La Pacífica, *Daubenmire* 805 (F), Río Corobici, *Gentry* 853 (F, MO), *Haber* 35 (MO, US), *Haber* 58 (MO), *Opler* 1789 (F, MO, UC), *Seigler* 12777 (NY); La Cruz, Cordillera de Guanacaste, Estación Orosí, camino a áreas de petroglifos, 10°57'48"N, 85°29'49"W, *Fernández* 1730 (INB); Paloverde, OTS Field Station 8 km W of Bagaces, *Gentry* 71473 (MO); Parque Rincón de la Vieja, Hacienda Santa María, sendero a las pailas, 10°48'N, 85°10'W, *Herrera* 700 (MICH).

Bunchosia mesoamericana is to be compared to other species with a tomentose bicarpellate gynoecium. From most of those it is immediately distinguished by its tomentose leaves with long, sinuous to twisted hairs, its leaf glands, which are mostly only two in the basal third of the lamina, and the fruit with a smooth (i.e., non-granulate) wall. Other useful characters are the punctiform lenticels, the

often well-developed peduncles, the sepals nearly glabrous except for the ciliate margin, and the eglandular petals. When the calyx glands are rudimentary that is a distinguishing character, because that condition is rare in *Bunchosia*, but some populations have normal, well-developed calyx glands. Another interesting peculiarity of *B. mesoamericana* is having the longest filaments in the front of the flower and the shortest near the posterior petal.

In my treatment for the *Flora de Nicaragua* (Anderson 2001b, p. 1264) this species was called "*Bunchosia* sp. A."

Bunchosia stipulacea W. R. Anderson, sp. nov.—TYPE: PANAMA. Chiriquí: Burica Peninsula, Monte Verde, 2.5 km W of the center of Puerto Armuelles, edge of open pasture and thicket of trees along creek, 80 m, 18 Feb 1973 fr, *P. Busey* 409 (holotype: MO!; isotypes: BM! CR! MEXU! MICH! NY! XAL!).

Frutex usque ad 4 m altus; lamina foliorum majorum 18–21.5 cm longa, 9–13.5 cm lata, late elliptica vel ovata, basi rotundata, apice apiculata vel abrupte brev-acuminata, abaxialiter ± pertinaciter sericea vel demum glabrescens, utrinque basi 1–3 glandulis ellipticis 1–2 mm longis et distaliter 7–16 glandulis (0.4–) 0.7–1.5 mm diametro in 1 serie instructa; petiolus 10–15 (–17) mm longus; stipulae (3.5–) 4–5 (–6) mm longae, asymmetricae; pseudoracemus (10–) 13–20 cm longus, axillaris, ex (16–) 20–52 floribus constans; petalum posticum ungue 5 mm longo, limbo 4.5 mm longo latoque minimum proximaliter glanduloso-dentato; gynoecium tricarpellatum, sericeum, stylo unico (ex 3 connatis) ca. 3 mm longo, stigmatibus distinctis; fructus aurantiaco-ruber, 10–12 mm longus, 15–17 mm diametro (siccus), sericeus vel glabrescens.

Shrub up to 4 m tall; stems initially densely sericeous, glabrescent and developing punctiform or elliptical lenticels in age. Lamina of larger leaves 18–21.5 cm long, 9–13.5 cm wide, broadly elliptical or slightly ovate, rounded at base, flat or slightly revolute at margin, rounded and usually apiculate or abruptly short-acuminate at apex with the apex 6–10 mm long, initially densely and rather loosely sericeous on both sides, soon glabrate above or with some hairs persistent especially on midrib and lateral veins, persistently loosely sericeous below with fine white hairs 0.5–1 mm long or unevenly glabrescent in age, the principal lateral veins 8–11 pairs, the abaxial glands on each side 1–3 near base (those elliptical, 1–2 mm long, pressed against midrib) and distally 7–16 (or more?) in ± a single row, between midrib and margin, (0.4–) 0.7–1.5 mm in diameter, circular, most numerous and largest in distal third; petiole 10–15 (–17) mm long, densely sericeous to glabrescent, eglandular or (often) bearing 2 large glands near apex; stipules (3.5–) 4–5 (–6) mm long, (1.2–) 1.5–2 mm wide, lanceolate or ovate and asymmetrically naviculiform (wider toward axil than toward node), sericeous to glabrate in age. Pseudoracemes (10–) 13–20 cm long, axillary to vegetative leaves, unbranched and without vegetative leaves, the axis sericeous to eventually glabrate, the (16–) 20–52 flowers almost all decussate from base to apex; bracts and bracteoles persistent; bracts 1.5–3 mm long; peduncle 1–4 mm long; bracteoles 0.7–2 mm long, 1 of each pair bearing 1 large ± decurrent abaxial gland; pedicel 3–6.5 mm long, sericeous to glabrate. Sepals 1.5–2 mm long and wide beyond attached part of glands, triangular, rounded at apex, abaxially densely and evenly sericeous, adaxially glabrous, appressed in anthesis; glands well developed, 8–9, all distinct or 2 from adjacent sepals ± completely connate, 2–3.5 mm long, elliptical or obovate, glabrous,

free distally, the posterior 2–4 sometimes decurrent onto pedicel. Petals yellow, glabrous; lateral petals reflexed, with the claw 2–2.5 mm long and limb 6–7 mm long, 4.5–6 mm wide, shallowly to deeply concave (the anterior pair cupshaped), repand or erose, eglandular; posterior petal with the claw erect and the limb spreading, the claw 5 mm long, widening gradually into the obovate limb ca. 4.5 mm long and wide, flat, glandular-dentate on proximal half or all around the margin with the glands largest proximally and much reduced to absent distally. Stamens glabrous; filaments 2.5–3.5 mm long opposite sepals, 2–3 mm long opposite petals, white, membranous, connate up to 1.2 mm; anthers 1.1–1.8 mm long, the connective somewhat glandular-swollen, yellow. Gynoecium 3-carpellate, densely and tightly sericeous its whole length including the style, flask-shaped with the 3-locular ovary ca. 1.5 mm high and merging gradually into the style; style apparently 1, actually 3 completely connate except for the 3 stigmas, ca. 3 mm long. Fruit orange-red, 10–12 mm long and 15–17 mm in diameter (dried), 3-lobed, sericeous to glabrate, the wall granulate even at maturity.

Endemic to the moist lowlands of southern Chiriquí, Panama, at elevations up to 150 m; to be expected in adjacent southernmost Costa Rica; collected with flowers in August and December and with fruits in February.

ADDITIONAL SPECIMENS EXAMINED. **Panama.** CHIRIQUÍ: along Río Dupí, near sea level, Dec fl, *Pittier 5226* (F, US); Río San Cristóbal, 2 mi W of David, in brush, 150 ft, Aug fl, *Tyson 911* (MO).

The epithet I have proposed for this species refers to its unusually long stipules. Cuatrecasas originally annotated some of the specimens cited here with the unpublished epithet “pittieri,” but in their treatment for the *Flora of Panama* (1981) Cuatrecasas and Croat used the name *Bunchosia lanieri* S. Watson for the plants of Panama. I agree that the two species are similar, but true *B. lanieri* seems to be limited to Belize, Guatemala, and Honduras. The following couplet distinguishes between them:

Stipules (3.5–) 4–5 (–6) mm long, asymmetrical; pseudoraceme (10–) 13–20 cm long, containing (16–) 20–52 flowers; leaf glands distal to base (0.4–) 0.7–1.5 mm in diameter, 7–16 (or more?) on each side in ± a single row between midrib and margin, most numerous and largest in distal third; gynoecium tightly sericeous. *B. stipulacea.*

Stipules 1–2.5 mm long, symmetrical; pseudoraceme 7–12 cm long, containing 10–24 flowers; leaf glands distal to base 0.1–0.4 mm in diameter, (few–) many on each side, tracking the midrib and/or scattered over the lamina but never in a single row between midrib and margin, diminishing in number (and often in size) in distal third; gynoecium tomentose. *B. lanieri.*

Byrsonima flexipes W. R. Anderson, sp. nov.—TYPE: VENEZUELA. Amazonas: Depto. Atabapo, orilla del Río Cuchaken, 3°31'N, 67°22'W, 100 m, Oct 1989 fr, *J. Velazco 831* (holotype: MICH!; isotypes: MO! NY! PORT!). Fig. 2.

B. rodriguesii W. R. Anderson affinis sed stipulis 2–2.5 mm longis, pedicellis in fructu sigmoideis 0.8–1 mm diametro, sepalis abaxialiter pubescentibus, fructibus siccis 6–8 mm diametro differt.

Tree 3–15 m tall; vegetative internodes glabrous except hirsute in axil of stipules. Leaves glabrous; lamina of larger leaves (11–) 12.5–17.5 cm long, (5–) 6.5–8.5 cm wide, elliptical or slightly obovate, cuneate and somewhat decurrent at base, falcate distally, abruptly short-acuminate at apex with the acumen 5–12 mm long, the 8–11 pairs of principal lateral veins visible on both sides, the reticulum visible below; petiole (18–) 22–33 mm long; stipules 2–2.5 mm long, distinct, broadly



FIG. 2. *Byrsonima flexipes*. a. Fruiting branch, $\times 0.5$. b. Stipules, adaxial view, $\times 5$. c. Inflorescence axis showing bracts, bracteoles, and base of one pedicel, $\times 5$. d. Enlarging fruit closely invested by accrescent sepals, $\times 2.5$. e. Fruit from above, $\times 3$. Drawn by Karin Douthit. (Based on Velazco 831.)

ovate or triangular, abaxially glabrous, adaxially densely appressed-hirsute. Inflorescence 9–25 cm long in fruit, velutinous, with the flowers borne in dense cincinni of (1–) 2–3 (or more?), the cincinni sessile or raised on a stalk up to 4 mm long; bracts and bracteoles 1–3.5 mm long, triangular-linguiform, sparsely sericeous or

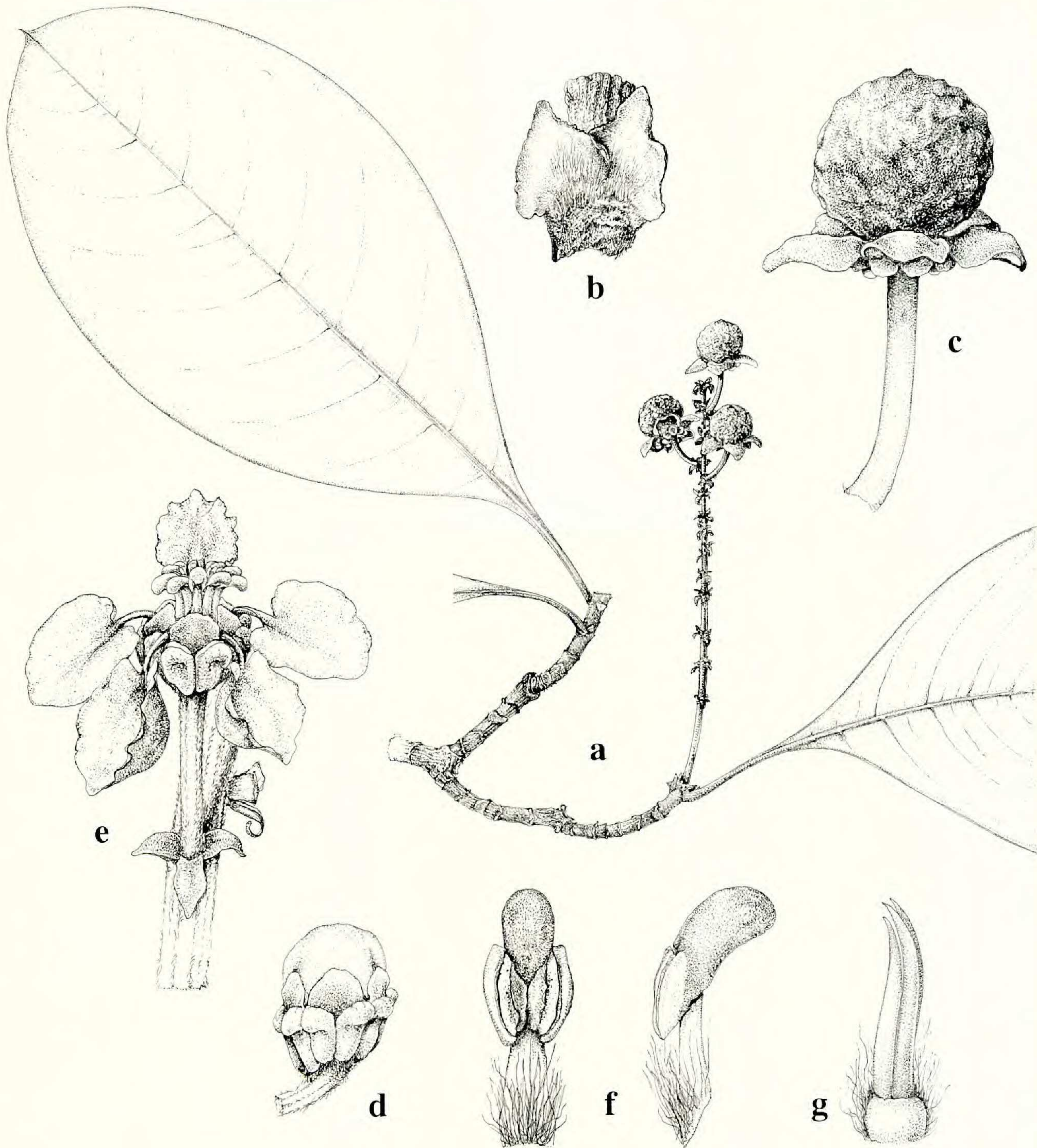


FIG. 3. *Byrsonima rodriguesii*. a. Fruiting branch, $\times 0.5$. b. Stipules, adaxial view, most hairs removed, $\times 2.5$. c. Fruit (dried), $\times 2$. d. Flower bud, $\times 2.5$. e. Flower, $\times 2.5$. f. Stamens, adaxial view (left) and side view (right), $\times 7.5$. g. Gynoecium (glabrous ovary shown surrounded by hairs on the receptacle), $\times 5$. Modified from the protologue (Mem. New York Bot. Gard. 32: 103. 1981).

ciliate on margin to nearly glabrous, reflexed to revolute, persistent past maturity of the fruit; peduncle none or very short; pedicel ascending and becoming sigmoid in fruit, 8–12 mm long, 0.8–1 mm diameter, \pm velutinous. Sepals all biglandular, abaxially sparsely velutinous or sericeous, adaxially glabrous, enlarging to 5–7 mm long and 3–4.5 mm wide in fruit, the accrescent sepals often closely investing the enlarging fruit, later reflexing; petals and stamens unknown; gynoecium presumably glabrous. Fruit (dried) 6–8 mm in diameter, glabrous, the nut prominently bony-rugose.

Lowland forests near streams, in Amazonas, Venezuela, and Caquetá, Colombia; unknown with flowers, collected with fruits in October, November, and February.

ADDITIONAL SPECIMENS EXAMINED. **Colombia.** CAQUETÁ: Parque Nacional Natural Chiribiquete, Río Cuñare – Raudal del tubo, Feb fr, *Fundación Biológica Puerto Rastrojo CHI-61* (K). **Venezuela.** AMAZONAS: Río Autana, afl. del Sipapo, Nov fr, *Cruxent 69* (VEN); Depto Atabapo, Río Atacavi, 3°12'N, 67°24'W, 100 m, Nov fr, *Velazco 1153* (MICH, MO, PORT); Depto Atabapo, Río Caname, a 1 km de la confluencia con el Río Atabapo, 3°41'N, 66°27'W, 95 m, Nov fr, *Yañez 118* (MICH, MO).

Byrsonima flexipes is named for its sigmoid-ascending pedicels. In the *Flora of the Venezuelan Guayana* (Anderson 2001a, p. 125) I treated this species as “*Byrsonima* sp. A.” My comments in that publication on its affinities are worth repeating here: “The species resembles *Byrsonima rodriguesii* W. R. Anderson, a plant from the vicinity of Manaus that differs in its longer stipules, glabrous sepals that are soon reflexed or revolute in the enlarging fruit, fruiting pedicels that are thicker and curved upward but not sigmoid, and larger fruits. The petals of the new species can be expected to be white turning red, as in *B. rodriguesii*, and for the same reason its anthers should have a large, glandular connective that extends well beyond flattened locules.” For an illustration of *Byrsonima rodriguesii*, see Fig. 3.

Heteropterys aequatorialis W. R. Anderson, sp. nov.—TYPE: ECUADOR. Guayas: Capeira, 22 km N of Guayaquil, 2°S, 79°58'W, disturbed dry forest, 20–150 m, 15 Jul 1986 fl/fr, A. Gentry & C. Dodson 54847 (holotype: MICH!; isotype: MO!). Fig. 4.

Liana lignosa, caulibus primo velutinis pilis V-formibus instructis; lamina foliorum majorum 2.5–7 (–9.2) cm longa, 1.5–4.5 (–5.2) cm lata, utrinque ± pertinaciter velutina pilis V-formibus, eglandulosa vel interdum margine prope basim biglandulosa; petiolus 3–6 (–12) mm longus, plerumque inter mediam et apicem biglandulosus; inflorescentia ex umbellis vel corymbis (3–) 4–5 (–10)-floribus constans, pedunculis 2–4 mm longis, bracteolas infra apicem ferentibus; sepala per anthesin appressa; petala flava, 4 lateraliter dorsaliter anguste carinata; stamina glabra, filamentis ca. 1/2-connatis; stigmata apice dorsaliter rotundata vel truncata; samara (17–) 20–30 mm longa, parce sericea, nux reticulo prominenti.

Woody vine, with stems up to 15 mm in diameter, initially velutinous with very short, coppery or occasionally golden, V-shaped hairs, soon or eventually glabrescent and developing many punctiform lenticels. Lamina of larger leaves 2.5–7 (–9.2) cm long, 1.5–4.5 (–5.2) cm wide, ovate or elliptical or rarely slightly obovate, obtuse to rounded at base, obtuse to rounded and usually apiculate at apex, eglandular or occasionally biglandular on edge near base, ± persistently velutinous above with very short V-shaped hairs or eventually glabrescent, persistently velutinous below with longer V-shaped hairs, the hairs occasionally becoming ± appressed in age or rarely deciduous, the principal lateral veins 5–7 pairs, obscure or sunken above, prominent below; petiole 3–6 (–12) mm long, velutinous like stem, usually bearing 2 large glands between middle and apex, sometimes eglandular; stipules 0.2–0.6 mm long, borne on upper edges of petiole just above base. Inflorescence paniculate, coppery- or golden-velutinous, the flowers borne in umbels or tight corymbs of (3–) 4–5 (–10); leaves in the inflorescence abruptly reduced and bearing larger glands; bracts 0.7–1.2 mm long, 0.5–0.7 mm wide, ovate or elliptical, abaxially appressed-tomentose, adaxially glabrous, eglandular, persistent; peduncle 2–4 mm long; bracteoles like the bracts but shorter, strongly appressed, eglandular or glandular-callose abaxially at base, borne below apex of peduncle (as low as the middle); pedicel 3.5–6 mm long. Flowers ca. 8–10 mm in diameter. Sepals 1–1.7 mm long beyond glands, 1–1.7 mm wide, triangular, obtuse

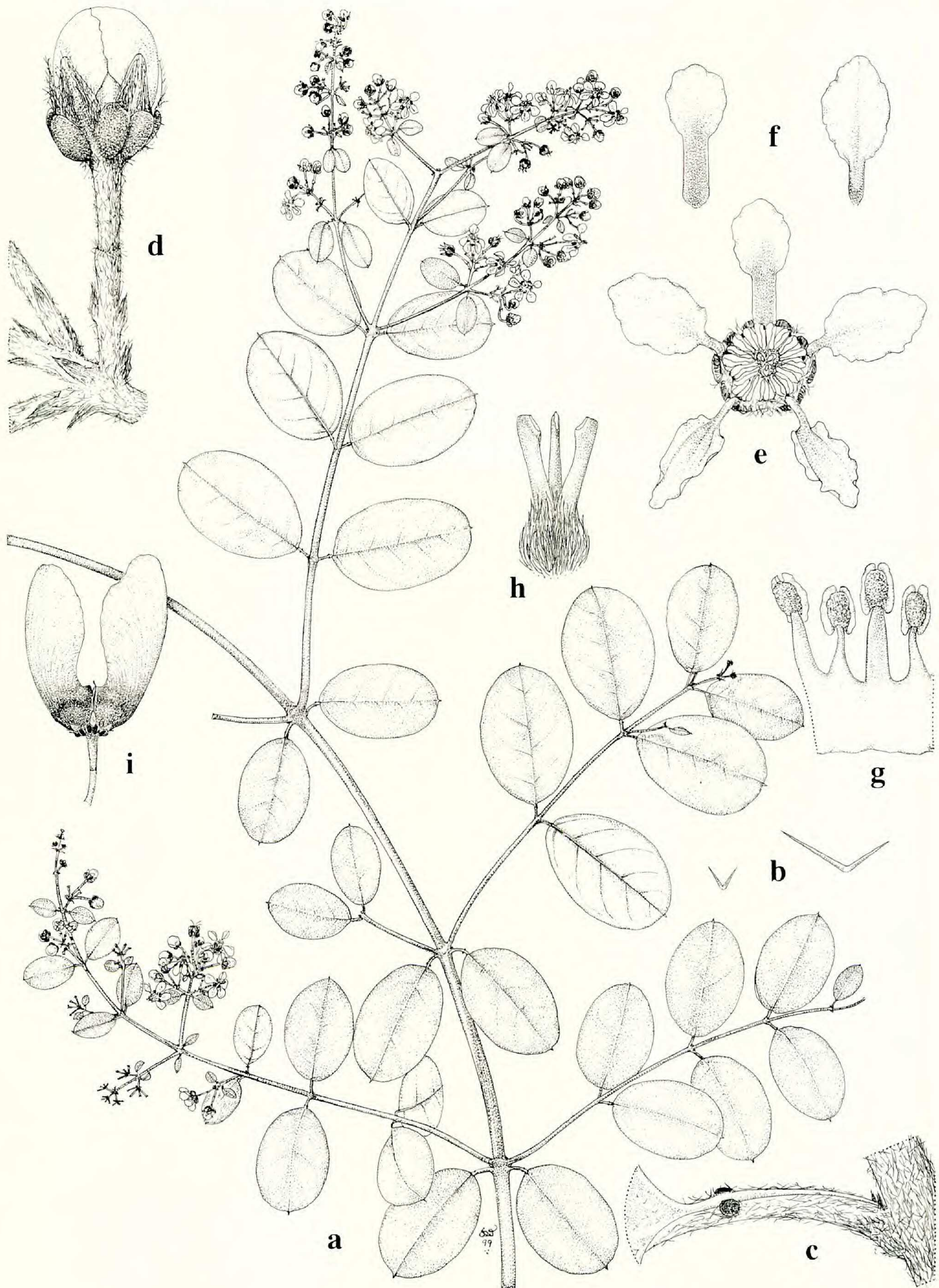


FIG. 4. *Heteropterys aequatorialis*. a. Flowering branch, $\times 0.5$. b. Hairs from adaxial leaf surface (left) and abaxial surface (right), $\times 20$. c. Petiole with basal stipules and distal glands, $\times 5$. d. Umbel showing one flower bud, $\times 5$. e. Flower from above with posterior petal at top, $\times 4$. f. Posterior petal (left) and posterior-lateral petal (right), $\times 4$. g. Part of androecium, abaxial view, with longer stamens opposite sepals, $\times 7.5$. h. Gynoecium, anterior style in center, $\times 7.5$. i. Fruit with only two of the three samaras developed, $\times 1$. Drawn by Karin Douthit. (Based on: a–c, *Madsen 63796*; d–h, *Harling 3002*; i, *Gentry & Dodson 54847*.)

at apex, loosely investing bud, appressed in anthesis, abaxially thinly or unevenly sericeous, adaxially glabrous, the anterior eglandular, the lateral 4 all biglandular, the glands 1.1–2 mm long, glabrous. Petals yellow turning orange or reddish in age, glabrous, eglandular on the margin; lateral petals spreading to reflexed, the claw 1–1.5 mm long, the limb 3–3.7 mm long, 2–3 mm wide, elliptical or rectangular, often slightly auriculate at base, entire, denticulate, or erose, \pm concave to flat, abaxially narrowly carinate; posterior petal erect with the limb reflexed, the claw 1.5–2 mm long, 0.7–0.9 mm wide, the limb 2.3–3.3 mm long, 2–3 mm wide, elliptical to subcircular, entire or erose, \pm flat, abaxially slightly carinate or smooth. Stamens glabrous; filaments 1.5–3 mm long, connate in the basal 0.8–1.5 mm, unequal, generally longer opposite sepals than petals; anthers glabrous, 0.7–1.2 mm long, subequal, reflexed in age, the connective glandular-swollen. Ovary 1–1.5 mm high, sericeous; styles 1.7–2.3 mm long, equal, straight, erect to divergent, terete or laterally \pm flattened, rounded or truncate dorsally at apex, the stigma internal and circular or vertically elliptical. Samaras borne on a pyramidal torus 1.3–1.5 mm high, with a smooth yellow 3-lobed disc developing as fruits mature and evident only after samaras fall; samara (17–) 20–30 mm long, thinly sericeous with short, straight, strongly appressed hairs; dorsal wing (12–) 15–25 mm long, (5–) 8–12 mm wide, the abaxial edge bent abruptly or curved gradually upward; nut 5–6 mm long, 4.5–5.5 mm high, subconical to subsphaeroidal, unwinged on sides but with prominent reticulate veins.

Dry, deciduous forests in the Pacific lowlands of Ecuador and adjacent Peru, from sea level to 300 m; collected with flowers May–December and with fruits May–January.

ADDITIONAL SPECIMENS EXAMINED. **Ecuador.** EL ORO: Tumbus, Gulf of Guayaquil, Oct fl, *Barclay* 590 (BM, US).—GUAYAS: Island of Puná, Sep fl, *Barclay* 418, 477 (both BM); El Progreso along road between Salinas and Guayaquil, Nov fr, *Barfod et al.* 48253 (AAU); Km 21 Guayaquil–Daule, Sep fl/fr, *Dodson & Dodson* 11441 (MO); 9 km W of Cerecita on Guayaquil–Salinas toll road, Oct fr, *Gentry* 12268 (MICH, MO); type locality, Jul fl/fr, *Gentry & Dodson* 54790 (MICH, MO); Guayaquil, Sta. Ana, Oct fl, *Harling* 3002 (MICH, S); Guayaquil–Salinas Road, 1–5 km E of El Progreso, Jan fr, *Harling & Andersson* 21097 p.p. (GB [flowering branch = *Bunchosia plowmanii* W. R. Anderson]); 10 km N of Cerecita on road to Julio Moreno, May fl/imm fr, *Harling & Andersson* 25052 (GB, MICH); 3 km N of Julio Moreno (Simón Bolívar), May fl, *Harling & Andersson* 25026 (GB); Isla Puná, 2°45'–49'S, 79°55'–80°08'W: near Puná Nueva, Jun fl, *Madsen* 63563B (AAU, MICH), Campo Alegre to Puná Vieja, Jul fl, *Madsen* 63796 (AAU, MICH), El Placer toward Río Hondo, Sep fl, *Madsen* 63932 (AAU), vicinity of La Polvora and Concordia, Nov fl, *Madsen* 64118 (AAU); Guayaquil Cantón, Bosque Protector Cerro Blanco, carretera a Salinas Km 15, 2°10'S, 79°58'W, Aug bud, *Rubio et al.* 1908 (MICH); Cerro Bellavista, Cord. Colonche, Sep fl, *Valverde* 1800 (SEL).—**MANABÍ:** Near base of Montecristi, Dec fl, *Dodson & Thien* 1739 (WIS); Pepa de Huso near Portoviejo, Sep fl/fr, *Játiva & Epling* 986 (MO, NY, S, UC). **Peru.** TUMBES: S side of Quebrada Angostura (at Hualtaco) 8–10 km from El Caucho, Bosque Nacional de Tumbes, *Simpson* 505 (F, NY).

The epithet of this species denotes the fact that it is nearly endemic to Ecuador. *Heteropterys aequatorialis* belongs to a group of species characterized by appressed sepals, yellow petals, and well-developed peduncles with the bracteoles borne well below the apex. Within that group it goes with the species that bear glands on the petiole or on the *margin* of the lamina, never on the surface, and among those its sessile, V-shaped hairs suggest a relationship to *H. trichanthera* Adr. Juss. and *H. cochleosperma* Adr. Juss. *Heteropterys trichanthera* is a variable species (or species complex) from eastern Brazil (Piauí, Pernambuco, Bahia, Minas Gerais) that is immediately distinguished by its hairy anthers. *Heteropterys cochleosperma* (= *H. hassleriana* Nied.) is most common in Paraguay and adjacent Bolivia, but it

extends far into Brazil as well (Mato Grosso do Sul, Goiás, Minas Gerais, Bahia, São Paulo, Paraná). It differs from *H. aequatorialis* most obviously in its larger leaves with longer petioles bearing larger glands. Its lamina is usually soon glabrate and shining above, and (especially in the reduced inflorescence leaves) often bears several distal glands on the margin. The inflorescence is more open, with longer stalks bearing the umbels, and the stigma is usually dorsally apiculate at the apex. The nut of the samara is tomentose to glabrate and wrinkled when dry.

Heteropterys hammelii W. R. Anderson, sp. nov.—TYPE: COSTA RICA. Alajuela: Cantón de San Ramón, Pacífico Central, por el Río Barranca, camino a ICE planta electrica por Bajo Barranca, 1 km N de la Interamericana, 10°02'30"N, 84°34'02"W, 400 m, 31 Dec 1993 fl, B. Hammel 19364 (holotype: MICH!; isotypes: INB! MO).

Liana lignosa; lamina foliorum majorum 3.5–9 cm longa, 2–5.5 cm lata, ovata, mox glabrata, interdum 2 glandulis peltatis in pagina abaxiali instructa; inflorescentia paniculata ex umbellis vel corymbis 2–6-floribus constans; bracteolae 0.5–0.6 mm longae, rotundatae, apicales; sepala glabra; petala rosea, 4 lateralia abaxialiter anguste carinata; styli divergentes, stigmatibus transverse ellipticis; samara 18–30 cm longa, ala dorsali 6.5–10 mm lata, alula laterali utrinque singulari, 2–4 × 4–5.5 mm.

Woody vine, the vegetative stems initially densely and loosely sericeous but very soon glabrescent to quite glabrous, developing many punctiform lenticels in age. Lamina of larger leaves 3.5–9 cm long, 2–5.5 cm wide, ovate, cuneate to rounded at base, acute, obtuse, or acuminate at apex, initially densely tomentose on both sides but soon glabrate or with some hairs persistent especially on abaxial midrib, usually bearing (0) 1 (2) peltate glands on each side of abaxial midrib on lateral veins between midrib and margin and within 20 mm of base, the glands with a stalk 0.2–0.5 mm long and a cap 0.4–0.8 mm in diameter, the principal lateral veins 4–7 pairs, prominent below; petiole 3–10 mm long, initially tomentose but soon glabrate, eglandular or occasionally bearing on distal half 1 or 2 glands like those of lamina; stipules absent or minute (0.1–0.2 mm long), borne on upper edges of petiole at base. Inflorescence paniculate, thinly tomentose to glabrate, the flowers borne in umbels or corymbs of 2–6; leaves in the inflorescence abruptly reduced and bearing very large abaxial glands up to 2 mm in diameter; bracts 0.8–1.1 mm long, 0.6–0.8 mm wide, lanceolate or ovate, glabrous or bearing a few abaxial hairs, eglandular, spreading; peduncle 1.5–2.3 mm long; bracteoles like bracts but shorter (0.5–0.6 mm long) and more rounded, eglandular or bearing 2 tiny glandular spots abaxially at base, borne at or just below apex of peduncle; pedicel 2.8–4 mm long, sparsely tomentose to glabrate. Flowers ca. 10 mm in diameter. Sepals 0.9–1.4 mm long beyond glands, 1.1–1.4 mm wide, ovate or triangular, rounded at apex, translucent and membranous at margin, loosely investing bud, erect in anthesis, glabrous, the anterior eglandular, the lateral 4 all biglandular, the glands 1.3–1.6 mm long, glabrous. Petals pink (or pink with white margins?) turning darker rose in age, glabrous; lateral petals spreading to reflexed, the claw ca. 1.5 mm long, the limb 3–3.5 mm long, 2.5–3 mm wide, obovate, ± decurrent onto claw, entire and eglandular, concave to nearly flat, abaxially carinate with the keel 0.1–0.2 mm wide; posterior petal erect with the limb spreading to horizontal, the claw ca. 3 mm long, ca. 0.9 mm wide, the limb 2.4–2.7 mm in diameter, subcircular, truncate or slightly auriculate at base, erose or denticulate,

eglandular but the proximal teeth sometimes thickened, somewhat crumpled, abaxially not or hardly carinate. Stamens glabrous; filaments 1.7–2.5 mm long, connate in the basal 0.5–1 mm, unequal, longest opposite anterior sepal, shortest opposite posterior petal, the posterior 3 slenderer than the other 7 and bent inward between 2 posterior styles; anthers 0.7–1.3 mm long, the posterior 3 shorter than the anterior 7, the connective mostly yellow, dark red around the margin. Ovary ca. 1 mm high, tomentose; styles 1.8–2.2 mm long, equal, straight or somewhat sigmoid and soon strongly divergent between stamens, nearly terete, triangular at apex and dorsally acute or blunt-tipped, the stigma internal and transversely elliptical. Samaras borne on a broad 3-sided torus ca. 1 mm high; samara 18–30 mm long; dorsal wing 15–25 mm long, 6.5–10 mm wide, loosely sericeous to glabrate; nut 3.5–5 mm long, 4–5 mm high, tomentose to glabrate, the sides with prominent reticulate veins and distally a single, usually undivided lateral winglet 2–4 3 4–5.5 mm.

Endemic to the Pacific lowlands of Costa Rica, in seasonally dry woodlands, 50–650 m; collected with flowers December–April and with fruits January–April.

ADDITIONAL SPECIMENS EXAMINED. **Costa Rica.** GUANACASTE: Comelco Property near Bagaces, open derived savannah, 50 m, Jan fl/fr, *Opler 519* (CR, F); forêts des collines de Nicoya, Feb fl, *Tonduz 13475* (CR, G, GH, K, US).—SAN JOSÉ: Cantón de Acosta, cuenca del Pirris-Damas, Valle del Candelaria, Río Candelaria, cerca camino a Ceiba Baja, 650 m, Apr fl/fr, *Morales 6163* (CR, INB); Vallée du Río Jarris, près de Pacaca, Jan fl, *Pittier 3259* (CR).

I am happy to name this species for Barry E. Hammel, b. 1946, indefatigable student of the flora of Costa Rica. *Heteropterys hammelii* belongs to a group of species with pink petals, glabrescent leaves, and stalked glands on the leaves that become very large on the reduced leaves in the inflorescence. It differs from all its relatives from Colombia to Mexico in its glabrous sepals; the others all have the sepals abaxially sericeous, at least on the proximal half. It is also notable for the single undissected lateral winglet on each side of the samara nut. In *H. standleyana* W. R. Anderson of northern Central America the nut is smooth-sided, and in *H. palmeri* Rose of western Mexico the nut bears, in the position of the lateral winglet of *H. hammelii*, an irregularly dissected row of outgrowths that is often double or triple. The apical bracteoles also help to distinguish *H. hammelii* from *H. palmeri* and from *H. lonicerifolia* Triana & Planch. of Colombia, in both of which the bracteoles are borne well below the apex of the peduncle.

Hiraea fosteri W. R. Anderson, sp. nov.—TYPE: PANAMA. Canal Zone: Barro Colorado Island, shore, first cove S of Colorado Pt., 23 May 1971 fl, *R. Foster 2296* (holotype: MICH!; isotypes: F! US!).

Liana lignosa, caulibus laxe sericeis pilis 1–2 mm longis, mox glabratis; lamina foliorum majorum 6–12 (–14) cm longa, 2.8–4.5 (–6) cm lata, elliptica vel parum obovata, basi cordata vel auriculata, margine distaliter glandulis cylindricis vel filiformibus instructa, apice acuminata, mox paene glabrata; petiolus 2.5–5.5 mm longus, eglandulosus vel apice biglandulosus glandulis usque ad 0.4 (–0.6) mm diametro; stipulae (1–) 1.5–3 (–4) mm longae, plerumque prope medium petioli portatae; inflorescentia ex umbellis 4-floris constans; pedicellus laxe sericeus pilis patentibus (0.8–) 1–1.5 mm longis; petala lateralia fimbriata vel laciniata, eglandulosa; petalum posticum glanduloso-fimbriatum vel -laciniatum; styli 3.5–5 mm longi, arcuati praecipue 2 posteriores; samara alislateralibus 17–22 mm latis, 25–29 mm altis, laxe sericeis vel tomentosis.

Woody vine; stems initially loosely sericeous with hairs 1–2 mm long, soon glabrate. Lamina of larger leaves 6–12 (–14) cm long, 2.8–4.5 (–6) cm wide, elliptical or widest somewhat above middle, cordate or auriculate at base, bearing several small cylindrical (occasionally filiform) glands on distal 1/2–2/3 of margin, acuminate at apex, initially loosely but densely sericeous or appressed-tomentose on both sides, soon glabrate above with at most a few hairs persistent on midrib at very base, ± glabrescent below at maturity but usually tightly sericeous proximally on midrib and often with much longer (1–2 mm) and looser hairs ± persistent on midrib distally, the principal lateral veins 7–10 pairs, prominent below but not above, interconnected by tertiary veins that are parallel or not, not especially close together and not all at 90° to midrib; petiole 2.5–5.5 mm long, sericeous or appressed-tomentose, eglandular or bearing 2 small knoblike glands up to 0.4 (–0.6) mm in diameter at apex; stipules (1–) 1.5–3 (–4) mm long, subulate, sericeous, usually borne at middle of petiole or slightly above or below but occasionally nearer base, straight or decurved. Inflorescence a solitary axillary cyme of three 4-flowered umbels, the lateral branches sometimes not developing and the inflorescence then a single stalked 4-flowered umbel; umbel without a gland in center, each borne on a loosely sericeous or tomentose stalk 3–11 mm long; bracts 1.5–2 mm long, 1.2–1.8 mm wide, ovate and boatshaped, abaxially sericeous, adaxially glabrous, eglandular, persistent; bracteoles like bracts or smaller, especially narrower; pedicel 16–20 mm long (–23 mm in fruit), very loosely sericeous with spreading, mostly straight hairs (0.8–) 1–1.5 mm long. Sepals 2–3.5 mm long, 1.5–2.5 mm wide, ovate or elliptical, obtuse or rounded at apex, appressed in anthesis, abaxially densely appressed-tomentose or loosely sericeous, adaxially glabrous, the anterior eglandular, the lateral 4 eglandular or biglandular, the glands when present 1–2 mm long, circular or elliptical, separated from each other, distinctly stalked. Petals yellow with (at least in the posterior petal) red in center of limb, glabrous; lateral 4 petals ± spreading, with the claw 2–3 mm long, the limb 5–6.5 mm long, 5.5–8 mm wide, circular or transversely elliptical, somewhat concave, fimbriate to short-laciniate all around margin with the divisions eglandular; posterior petal nearly erect, the claw 2.5–4 mm long and thicker than in lateral petals, the limb 4.5–7 mm long and wide, flat and ± circular, fimbriate or short-laciniate all around margin with the divisions ± glandular-thickened. Stamens glabrous; filaments connate for 0.6–1 mm, longer opposite sepals (3–5 mm) than opposite petals (2.3–4.5 mm), the shortest 3 opposite posterior 3 petals, straight to strongly bowed, especially those opposite the 2 posterior-lateral sepals; anthers 0.7–1.1 mm long, ± similar to each other, the locules separated on a massive red glandular connective. Ovary ca. 1 mm high, densely dark-brown-tomentose or hispid; styles 3.5–5 mm long, all bowed outward and then back toward center of flower but the posterior 2 much more strongly bowed than the anterior, all laterally flattened distally, with a short acute dorsal hook at apex, the stigma internal. Samara butterfly-shaped; lateral wings membranous, 17–22 mm wide, 25–29 mm high, semi-circular to almost elliptical, sinuous to rounded-erose, loosely sericeous or tomentose (to eventually glabrescent?) with spreading hairs 1–1.5 mm long or longer; dorsal wing 2.5–3.5 mm wide, 3–4 mm high, irregularly sharp-toothed, hispid like the nut; nut ± globose, 3–3.5 mm in diameter, hispid with straight basifixed or sub-basifixed hairs ca. 2–3 mm long.

Lowlands of Panama; collected with flowers and fruits in April and May.

ADDITIONAL SPECIMENS EXAMINED. **Panama.** CANAL ZONE: Barro Colorado Island, shoreline from small island N of Barrunga Point W to Drayton House, May fl, *Croat 5728* (MO); near Fort Randolph, low hilly woods, May fr, *Maxon & Harvey 6529* (GH).—COLÓN: Strand vegetation along beach ca. 3

mi SW of Colón, Apr fl, *Croat 14163A* (MO); disturbed ravine above Guaira (mainland opposite Isla Grande), Apr fl, *D'Arcy 4049* (MO).—DARIÉN: Manene to mouth of Río Coasi, Apr fl/fr, *Kirkbride & Bristan 1444* (NY).

Hiraea fosteri is named in honor of Robin B. Foster, b. 1945, who has had a distinguished career in neotropical botany. The type and all the paratypes except that collected by Kirkbride & Bristan were cited in the *Flora of Panama* (Cuatrecasas & Croat 1981) as *Hiraea reclinata* Jacq., but *H. fosteri* is easily separated from *H. reclinata*. *Hiraea reclinata* has leaves that are mostly obovate and obtuse to rounded or emarginate at the apex, the fine reticulum is \pm white against dark areoles on the abaxial side of the dried lamina, the petiole glands are larger, the hairs of the pedicel and samara wings are tightly appressed, and the divisions of the posterior petal are never glandular-thickened. When it has glands on the lamina margin they are sessile buttons, not the cylindrical or filiform glands of most specimens of *H. fosteri*. I have been unable to find any other name in Central or South America that could be applied to this species, for which reason I have concluded that it must be undescribed.

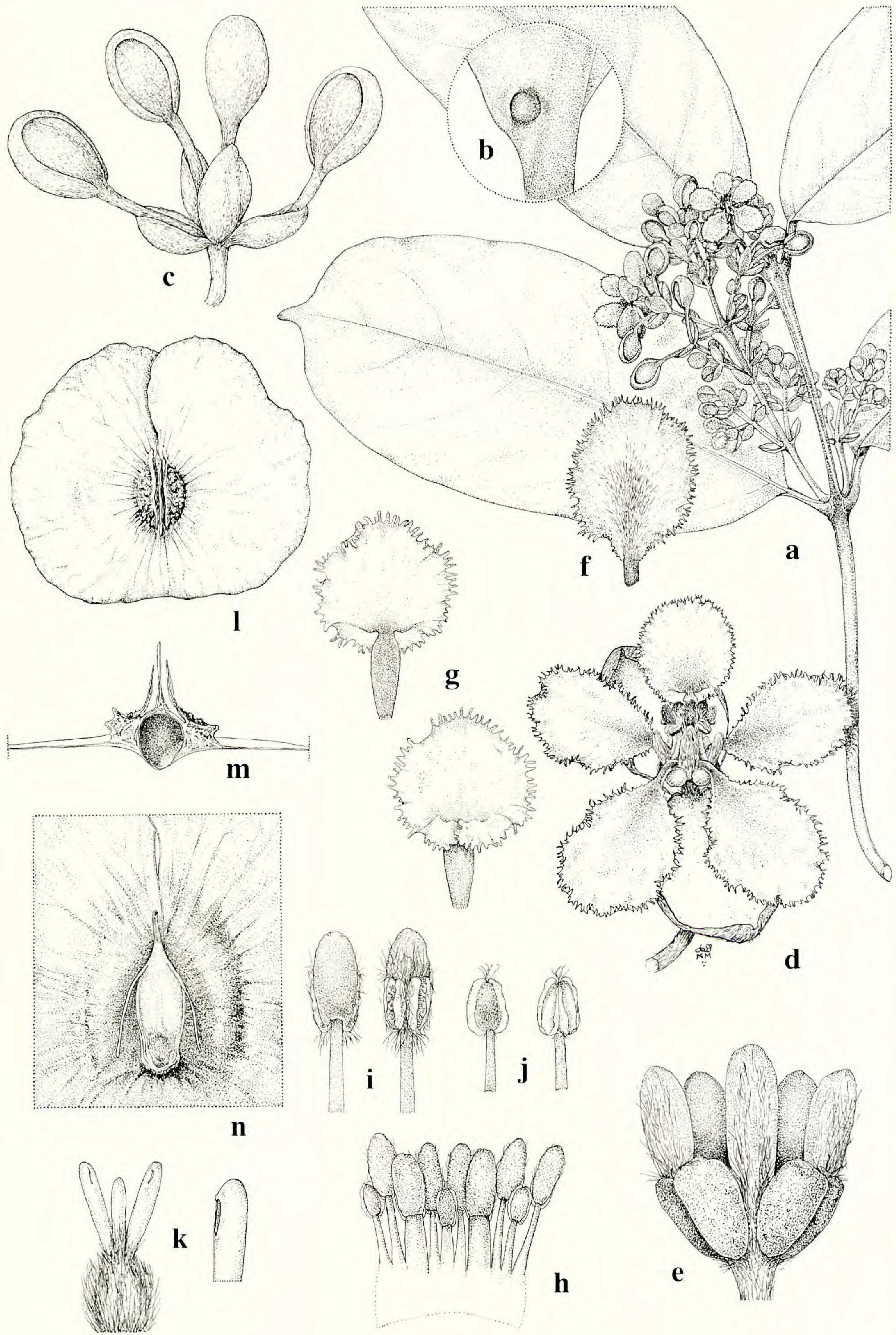
Of the specimens cited above, *Croat 5728* and *Kirkbride & Bristan 1444* have all the sepals eglandular; the others have the lateral sepals biglandular.

Mezia russellii W. R. Anderson, sp. nov.—TYPE: PERU. Loreto: Loreto, Nauta, carretera Nauta–Iquitos, bosque primario, 4°29'S, 73°35'W, 150 m, 9 Jan 1988 fl, R. Vásquez & N. Jaramillo 10301 (holotype: MICH!). Fig. 5.

Liana lignosa; lamina foliorum majorum 14–16.3 cm longa, 7–9 cm lata, glabrata; petiolus 13–17 mm longus; bracteae 7–8 mm longae, per anthesin persistentes; bracteolae 9–12 mm longae, eglandulosae; sepala glandulas 1–2 (–2.4) mm superantia, 1–1.1 mm lata, \pm plana, abaxialiter hirsuta pilis albidis rectis, glandulis distinctis; petala lateralia plana fimbriata; petalum posticum limbo circulari, basi auriculato lobis superpositis; filamenta petalis postico-lateralibus opposita crassissima; antherae sepalis oppositae dense hirsutae; styli recti, obtusi, stigmatibus internis anguste ellipticis; samara 67–90 mm lata et 55–80 mm alta, ala laterali basi continua.

Woody vine; stems initially brown-sericeous, soon glabrate. Lamina of larger leaves 14–16.3 cm long, 7–9 cm wide, elliptical or slightly obovate, broadly obtuse or rounded at base, thickened and slightly revolute at margin, rounded and abruptly short-acuminate at apex with the acumen 8–12 mm long, nearly glabrous at maturity (some leaves with a few short appressed hairs on abaxial midrib), abaxially bearing 1 large gland 1–2 mm in diameter at base on each side of midrib, often sunk in a crypt, and a single row of ca. 5–7 small (0.3 mm in diameter) impressed glands in a row within 1 mm of margin on distal half, the reticulum and ca. 5 pairs

FIG. 5. *Mezia russellii*. a. Flowering branch, $\times 0.5$. b. Abaxial base of lamina with large gland, $\times 5$. c. Umbel in bud, the bracts and bracteoles not yet full-sized, $\times 1.5$. d. Flower subtended by persistent bracteoles, posterior petal at top, $\times 2.5$. e. Calyx, anterior sepal in center, $\times 7.5$. f. Posterior-lateral petal, abaxial view, $\times 2.5$. g. Posterior petal, adaxial view (left) and abaxial view (below), $\times 3.5$. h. Androecium laid flat, abaxial view, the stamen to right opposite anterior sepal, $\times 5$. i. Anthers from stamens opposite sepals, abaxial view (left) and adaxial view (right), $\times 7.5$. j. Anthers from stamens opposite anterior-lateral petals, abaxial view (left) and adaxial view (right), $\times 7.5$. k. Gynoecium with anterior style in center (left, $\times 5$) and apex of single style, side view (right, $\times 7.5$). l. Samara, abaxial view, $\times 0.5$. m. Nut of samara in cross-section, with lateral wing truncated, $\times 1$. n. Ventral areole of nut of samara, $\times 1.5$. Drawn by Karin Douthit. (Based on: a–k, *Vásquez & Jaramillo 10301*; l–n, *Vásquez & Jaramillo 10429*.)



of principal lateral veins prominulous above, prominent below; petiole 13–17 mm long, sparsely sericeous to glabrate at maturity, eglandular; stipules not seen. Inflorescences terminal and axillary, persistently light-brown-sericeous or patchily glabrescent, branched, the flowers ultimately borne in 4-flowered umbels; floriferous bracts 7–8 mm long, ca. 6 mm wide, broadly elliptical, broadly rounded at apex and deeply concave, eglandular, abaxially densely light-brown-sericeous or patchily glabrescent and with the midrib slightly raised, adaxially glabrous, persistent through flowering, deciduous in fruit; peduncle 11–12 mm long in flower, thickened and slightly elongated in fruit, light-brown-sericeous; bracteoles 9–12 mm long, 9–11 mm wide, broadly elliptical and deeply concave to hemispherical, broadly rounded at apex and often tearing down the middle in age, eglandular, abaxially densely light-brown- or brown-sericeous and with the midrib raised, adaxially glabrous, persistent past maturity of fruit; pedicel ca. 1.3 mm long in flower, ca. 2.5 mm long in fruit, hirsute with the whitish or stramineous hairs appressed. Sepals 1–2 (–2.4) mm long beyond glands, 1–1.1 mm wide, spatulate, erect in anthesis, flat or slightly concave, abaxially densely appressed-hirsute except toward margins and apex with the hairs whitish or stramineous, stiff, and straight, adaxially glabrous, the anterior eglandular, the lateral 4 biglandular with the glands 7–9 mm long, 1–1.5 mm wide, obovate, compressed but not at all connate. Petals yellow, smooth (not crumpled), fimbriate all around margin, the fimbriae slightly glandular-thickened, especially on posterior petal; lateral petals abaxially white-sericeous in center with the hairs \pm straight, very fine, strongly appressed, the claw 1–2 mm long, the limb 7–9 mm long, 6–8 mm wide, obovate, the anterior pair larger and longer-clawed than the posterior pair; posterior petal glabrous, the claw 3.3 mm long, thick, constricted at apex, the limb 5–6 mm in diameter, orbicular and deeply auriculate at base with the lobes overlapping abaxially (behind the claw). Filaments glabrous, connate in the basal 1–1.5 mm, erect and straight or reflexed distally, strongly heteromorphic, 2.5–3.5 long, shortest opposite anterior-lateral and posterior petals, longest opposite sepals, almost as long opposite 2 posterior-lateral petals and 0.7 mm wide, much wider than all others; anthers with the connective abaxially dark red proximally and yellow distally, heteromorphic: 5 opposite sepals 1.7–2 mm long, densely hirsute on locules, the connective extended well beyond locules; 5 opposite petals bearing tufts of only a few hairs at base or base and apex and otherwise glabrous, the locules not exceeded by connective, the 3 opposite anterior-lateral and posterior petals 1–1.2 mm long, the 2 opposite posterior-lateral petals 1.5–1.8 mm long. Ovary 1.5 mm high, densely sericeous; styles nearly terete, straight, erect to divergent, the anterior ca. 2 mm long and sericeous on proximal half, the posterior 2 ca. 2.5 mm long, stouter than anterior, sericeous only at base, all 3 obtusely rounded at apex with the stigma apparently narrowly elliptical on the internal angle. Samara circular or somewhat oblate, 67–90 mm wide, 55–80 mm high, finely and tightly brown-sericeous with the very short hairs much denser on nut than wings; lateral wing 30–37 mm wide, continuous at base, deeply incised at apex to where both lobes fuse with central dorsal winglet, membranous, nearly flat except near nut, entire or repand at margin, the lobes overlapping; central dorsal winglet 8–10 mm wide, 25 mm high, roughly semicircular, often repand, flat; 2 lateral dorsal winglets parallel to central dorsal winglet, generally like it and almost as large, connected to lateral wing by a mass of irregular ruffles overlying aerenchyma; nut outside lateral wing without ribs or winglets, the ventral areole 11–12 mm high, 4.5 mm wide, narrowly ovate, bordered by 2 ribs that usually remain on samara.

ADDITIONAL SPECIMEN EXAMINED. **Peru.** MAYNAS: Iquitos, Nina rumi, bosque primario, suelos con un poco de arena blanca, 3°48'S, 73°25'W, 122 m, 4 Feb 1988 fr, *Vásquez & Jaramillo 10429* (MICH).

The epithet of *Mezia russellii* honors the memory of my son, Russell William Anderson (1972–1999). It is known only from the two collections cited above, and the flowers on the holotype are few and damaged by insects. Nevertheless, the species is very distinctive. Its short flat sepals with straight whitish hairs are unique in the genus; other species have the sepals 2–4 times as long, abaxially reddish- or brown-tomentose, and often revolute along the sides. Other diagnostic characteristics are the large, persistent bracts, the smooth and fimbriate lateral petals, the auriculate-based posterior petal with the lobes overlapping behind the claw, the very thick filaments opposite the posterior-lateral petals, the densely hairy locules of the anthers opposite the sepals, and the straight obtuse styles with elongated internal stigmas. The straight styles and glabrous leaves suggest that the closest relatives to *M. russellii* are to be sought in *M. includens* (Benth.) Cuatrec. sens. lat. and *M. curranii* W. R. Anderson, but both differ in most of the characters given above.

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